

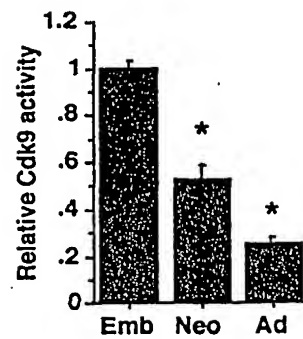
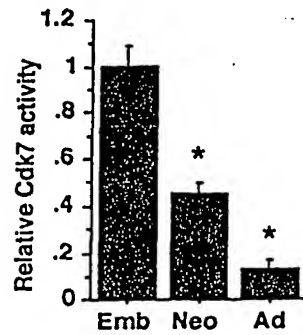
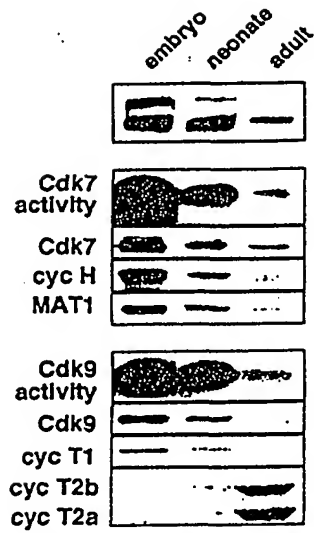
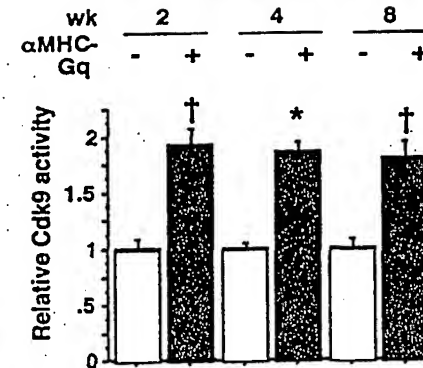
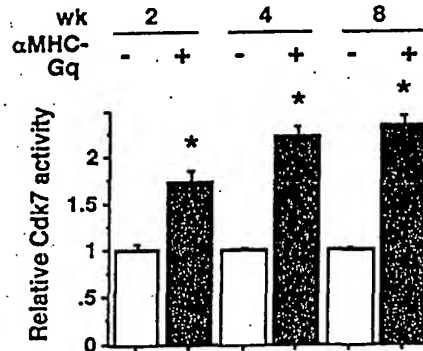
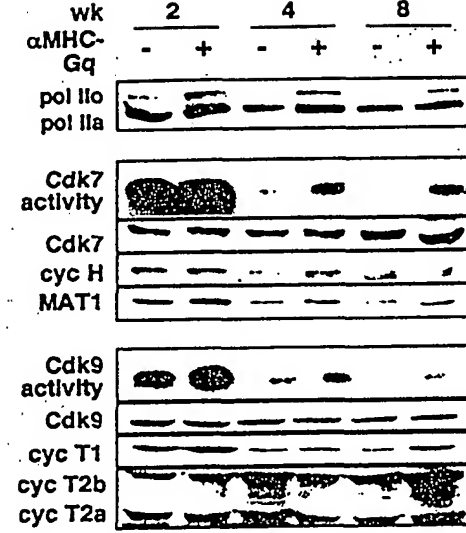
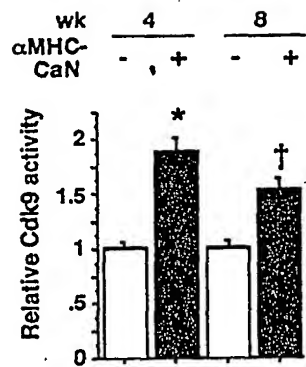
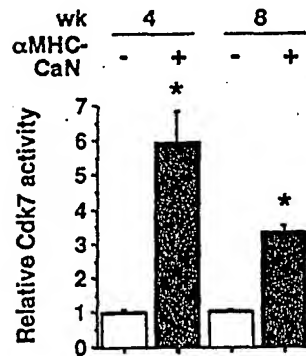
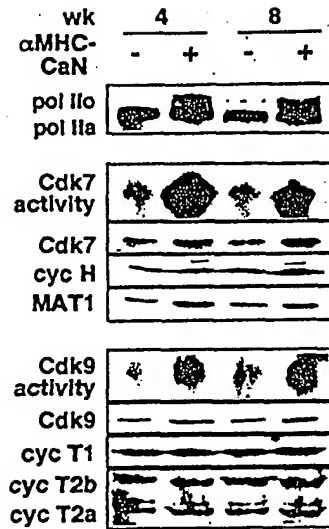
**A****B**

FIG. 1

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C



D

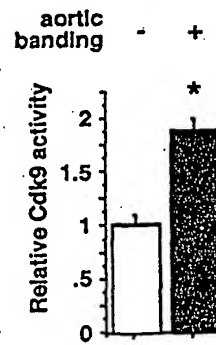
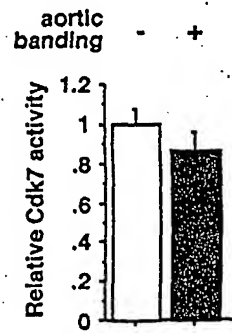
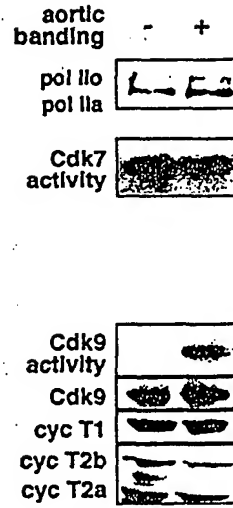


FIG. 1

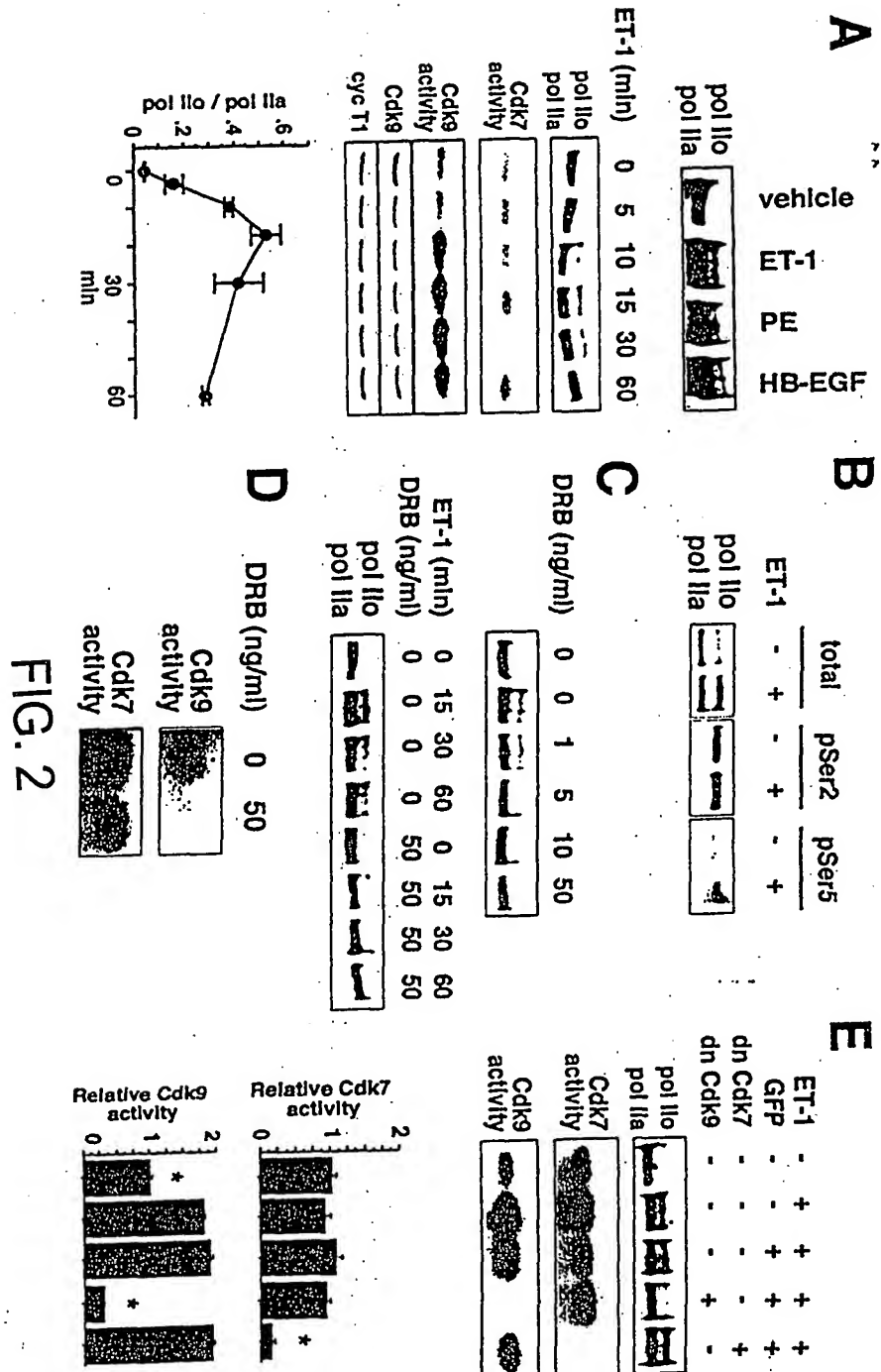


FIG. 2

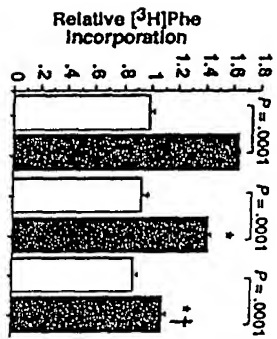
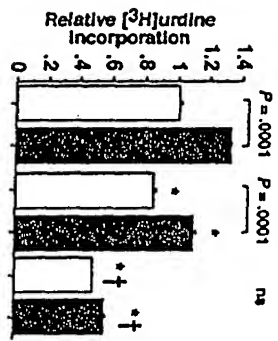
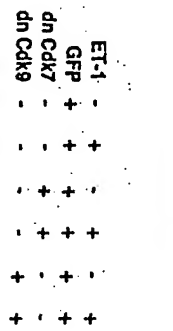
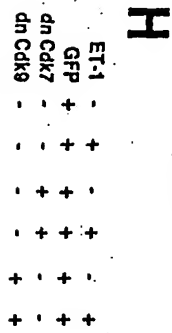
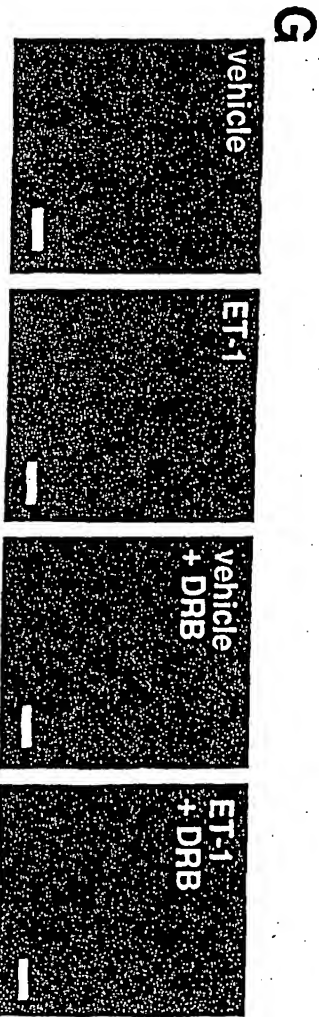
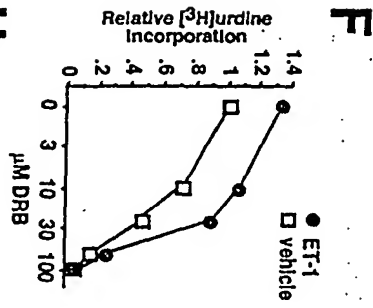
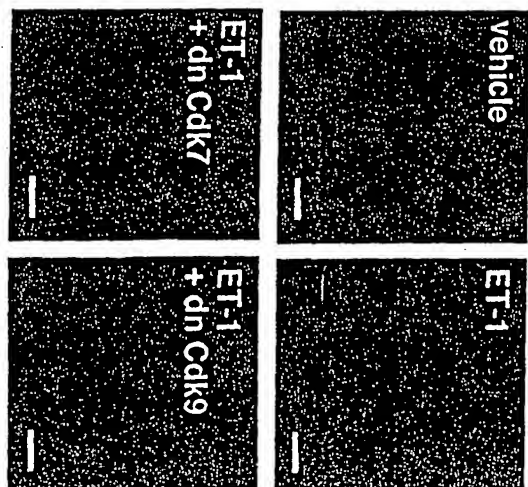


FIG. 2



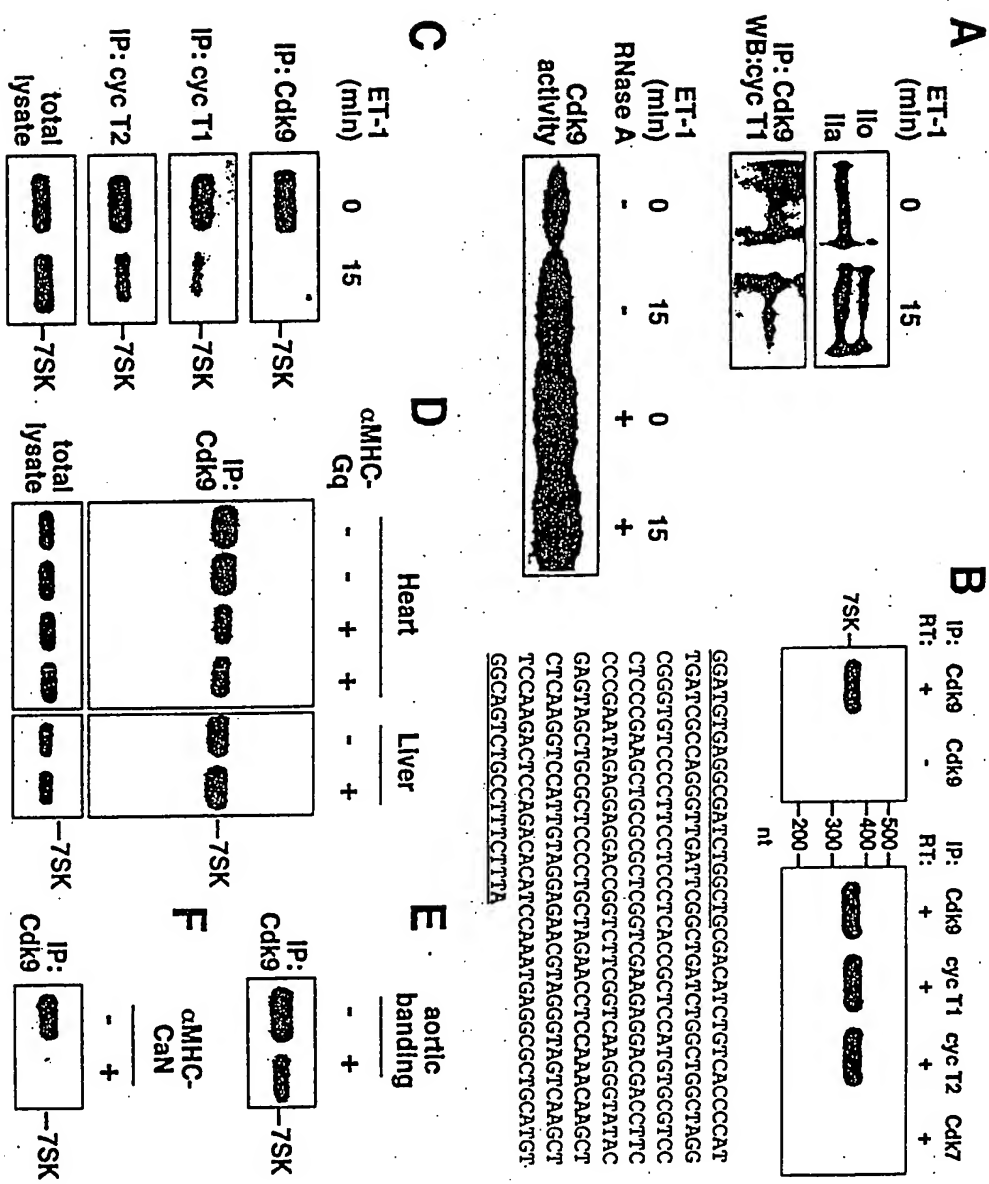


FIG. 3

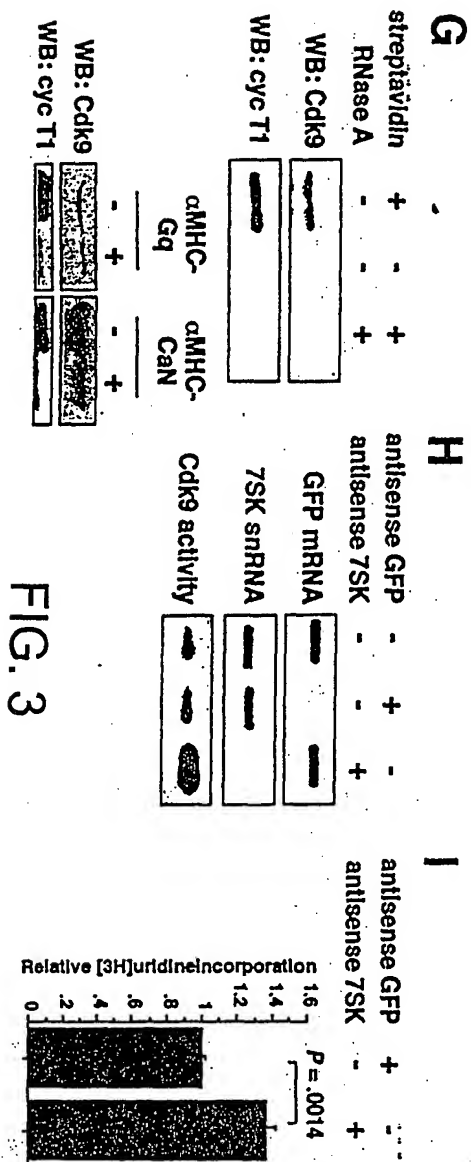


FIG. 3

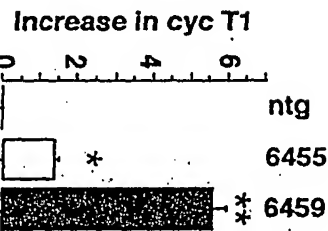
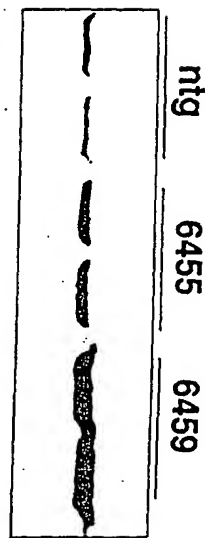
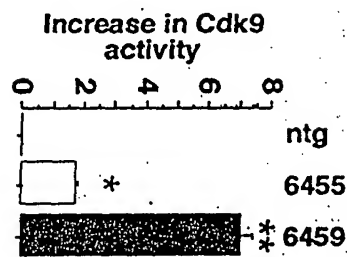
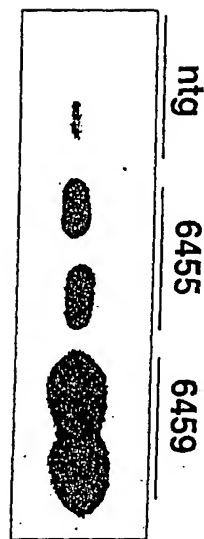
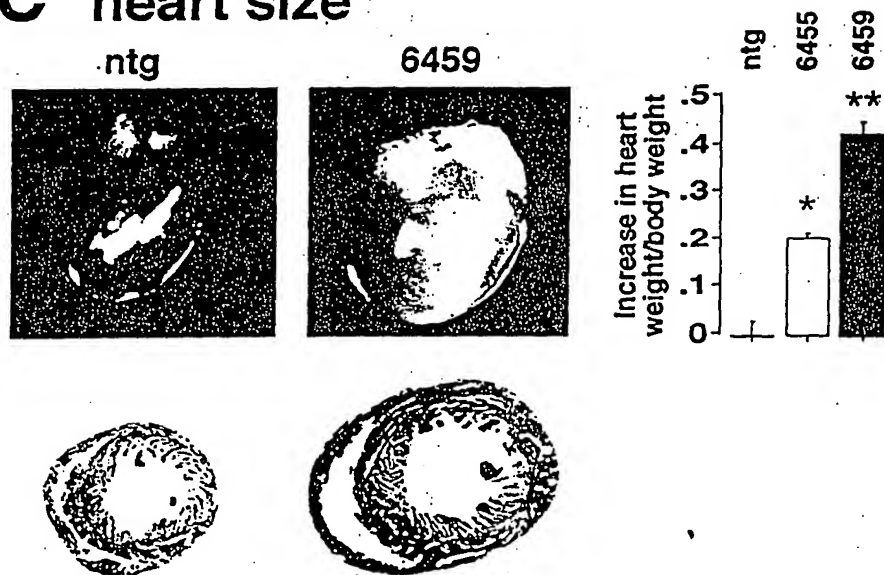
**A** cyclin T1 protein**B** Cdk9 activity

FIG. 4

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### C heart size



### D myocyte size



FIG. 4



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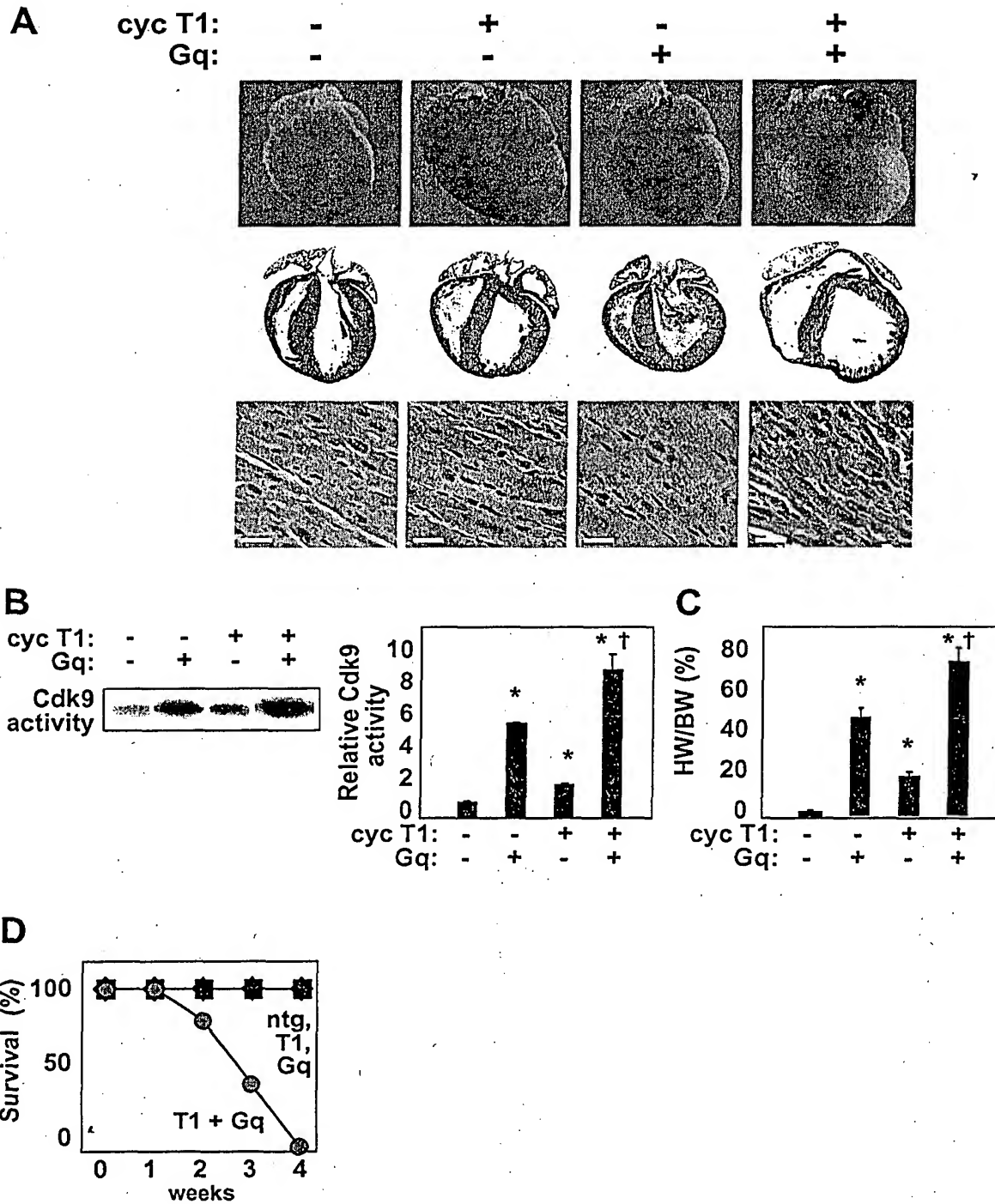


FIG. 5

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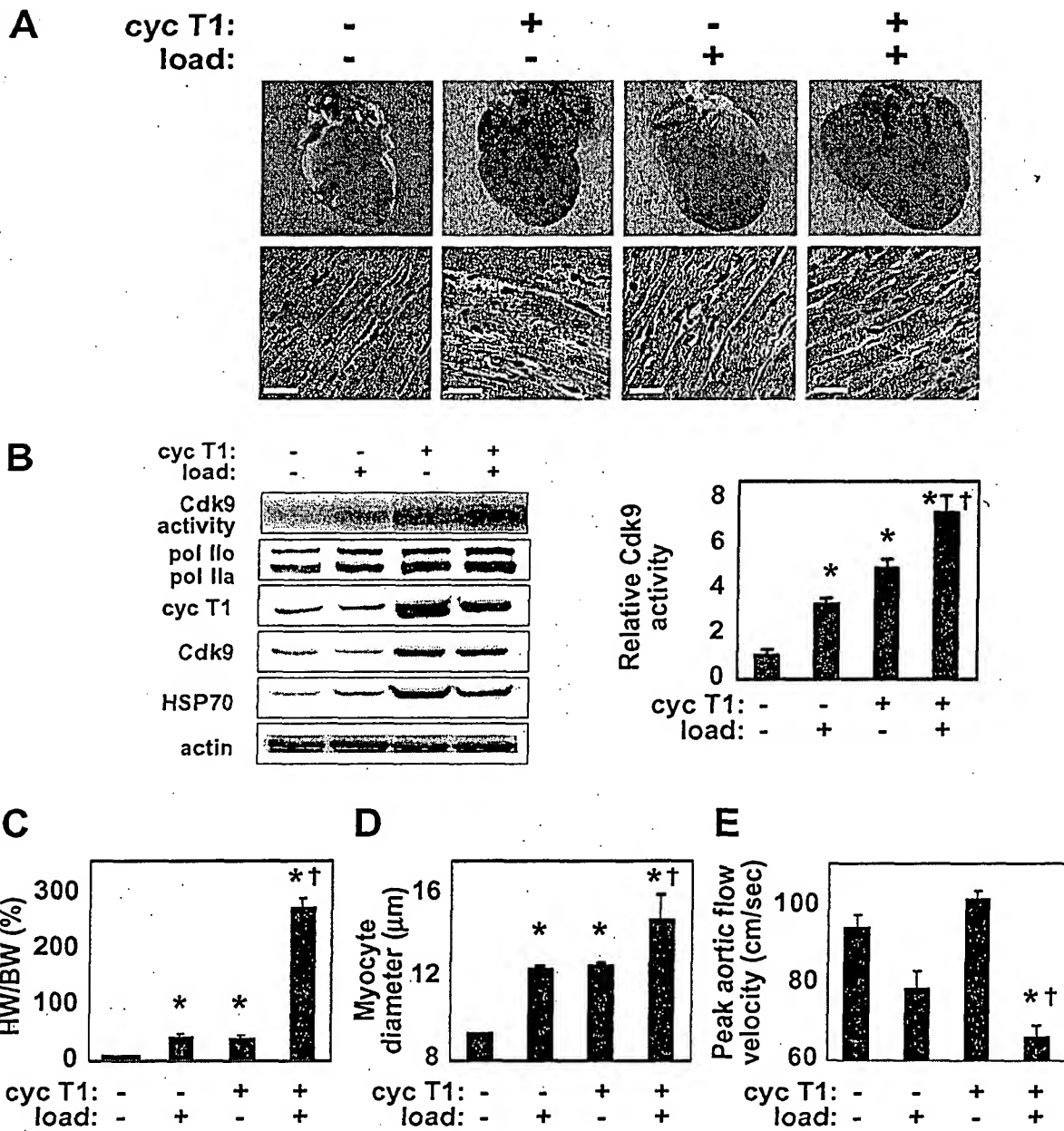
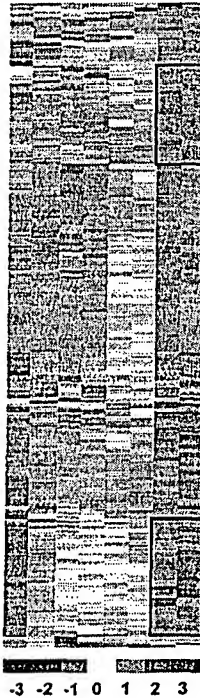


FIG. 6

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cyclin T1  
Gq

-	-	+	+
-	+	-	+



#### INDUCED SYNERGISTICALLY BY CYCLIN T1 + GQ:

26S proteasome-associated pad1 homolog  
aldehyde dehydrogenase family 1, subfamily A1  
annexins A1, A3  
BCL2/adenovirus E1B 19 kDa-interacting protein 1, NIP3  
casein kinase 1,  $\delta$   
CD44 antigen  
ceruloplasmin  
chloride intracellular channel 4 (mitochondrial)  
connective tissue growth factor  
cytochrome P450, 1b1, benz[a]anthracene inducible  
cytokine receptor-like factor 1  
DEAD (Asp-Glu-Ala-Asp) box polypeptide 3  
DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 50  
dual specificity phosphatase 6  
elastin  
endothelin 1  
fibroblast growth factor inducible 14  
fibulin 2  
FK506 binding protein 7 (23 kDa)  
growth arrest specific 6  
H3 histone, family 3B  
heat shock 27 kD protein 2  
heparin binding epidermal growth factor-like growth factor  
HIV type 1 enhancer binding protein 1  
hypoxia inducible factor 1 $\alpha$   
insulin-like growth factor binding protein 7  
integrin  $\beta$ 5  
lipocalin 7  
LPS-induced TN factor  
lysoyl oxidase  
metallothionein 1  
myomesin 2  
myosin light chain, alkali, cardiac atria  
nestin  
NIMA-related kinase 7  
nuclear protein 1  
PDZ and LIM domain 3  
peptidylprolyl isomerase C  
peroxiredoxin 4  
phosphatidylinositol-4-phosphate 5-kinase, type 1  $\alpha$   
phosphofructokinase, platelet  
phospholipase A2, group IVA  
procollagen, type V,  $\alpha$ 2; type VIII,  $\alpha$ 1  
proline 4-hydroxylase,  $\alpha$ 1  
prolyl 4-hydroxylase,  $\beta$  polypeptide  
prostaglandin I2 (prostaglandin) synthase  
quaking  
ras homolog gene family, member J  
RAS p21 protein activator 3  
reelin  
Rho-associated coiled-coil forming kinase 2  
ribonuclease, RNase A family 4  
RNA polymerase I associated factor, 53 kD  
S100 calcium binding protein A6 (calcyonin)  
sarcoglycan,  $\beta$   
scavenger receptor class B, member 2  
serpin, clade E, members 1, 2  
serpin, clade F, member 1  
SH3-binding domain glutamic acid-rich protein like  
spermidine/spermine N1-acetyl transferase  
thrombospondin 1  
tissue inhibitor of metalloproteinase 3  
transforming growth factor,  $\beta$ 1  
troponin I, skeletal, slow 1  
vascular cell adhesion molecule 1  
WW domain-containing protein 4

#### REPPRESSED SYNERGISTICALLY BY CYCLIN T1 + GQ:

3-oxoacid CoA transferase  
acetyl-Coenzyme A dehydrogenase, short chain  
aldo-keto reductase family 1, member B7  
alpha-methylacyl-CoA racemase  
branched chain ketoacid dehydrogenase E1,  $\beta$   
carnitine palmitoyltransferase 2  
citrate synthase  
creatine kinase, muscle  
cyclin-dependent kinase inhibitor 1C (P57)  
DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 16  
dihydrolipoamide branched chain transacylase E2  
dihydrolipoamide dehydrogenase  
dodecenoyl-Coenzyme A delta isomerase  
electron transferring flavoprotein,  $\alpha$   
enoyl coenzyme A hydratase 1, peroxisomal  
FK506 binding protein 4 (59 kDa)  
G elongation factor  
gap junction membrane channel protein  $\alpha$ 1  
GrpE-like 1, mitochondrial  
heat shock 10 kDa protein 1 (chaperonin 10)  
heat shock protein, 60 kDa  
inner membrane protein, mitochondrial  
interferon activated gene 203  
interferon activated gene 204  
isocitrate dehydrogenase 3 (NAD+)  $\alpha$   
isocitrate dehydrogenase 3 (NAD+),  $\gamma$   
mitochondrial ribosomal protein L12  
mitochondrial ribosomal protein L3  
NADH dehydrogenase (ubiquinone) flavoprotein 2  
peroxiredoxin 3  
phospholipid transfer protein  
phytanoyl-CoA hydroxylase  
potassium voltage-gated channel, Shal-related family,  
programmed cell death 8  
proteasome (prosome, macropain) 28 subunit,  $\alpha$   
retinoid X receptor  $\gamma$   
secreted modular calcium binding protein 2  
septin 4  
sialyltransferase 8 (alpha-2, 8-sialyltransferase) D  
succinate dehydrogenase complex, subunit A  
succinate-Coenzyme A ligase, ADP-forming,  $\beta$  subunit  
succinate-Coenzyme A ligase, GDP-forming,  $\beta$  subunit  
tetranectin (plasminogen binding protein)  
transcription elongation factor A (SII), 3  
translocator of inner mitochondrial membrane 44

FIG. 7

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**A** dn Cdk9: - + + add ntg littermate + load  
load: - - +

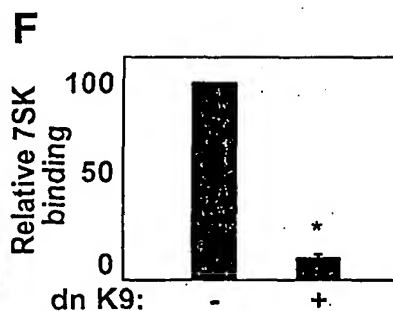
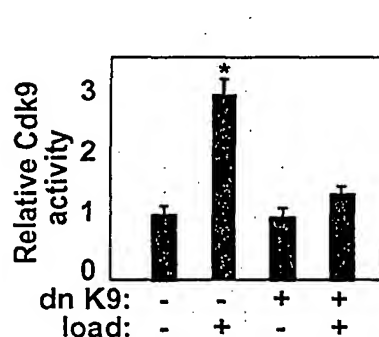
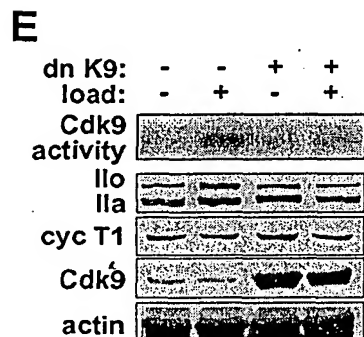
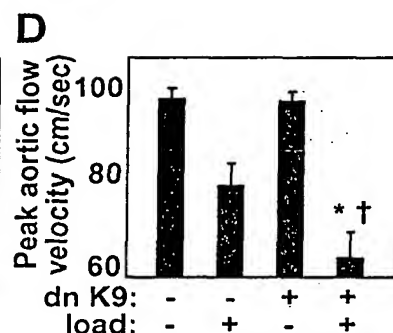
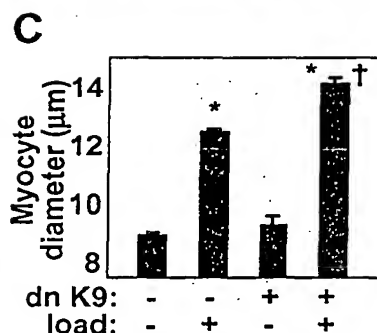
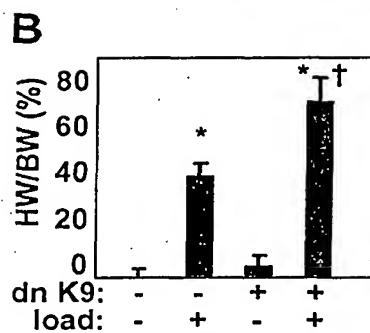
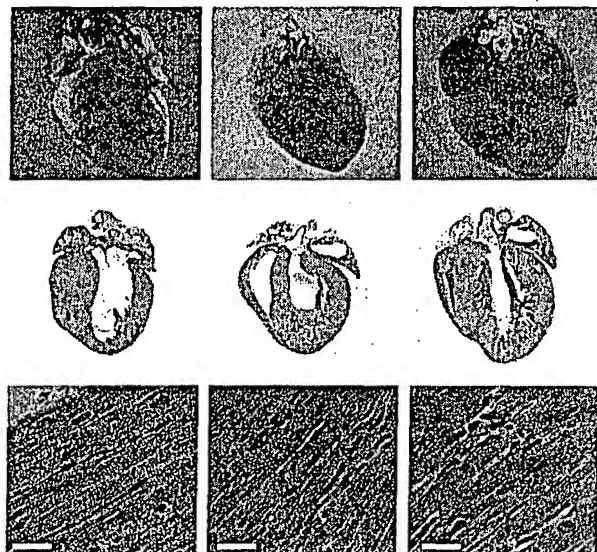


FIG. 8

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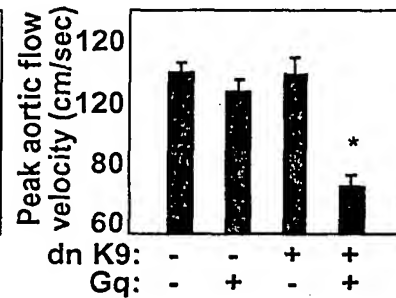
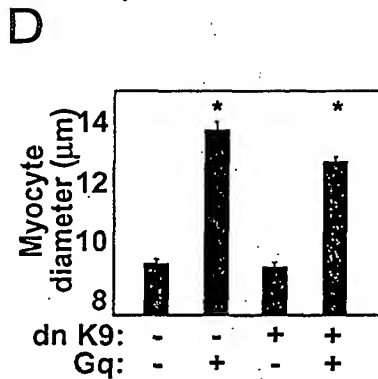
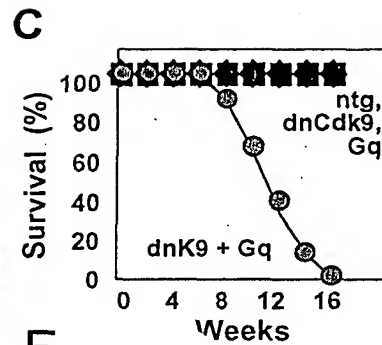
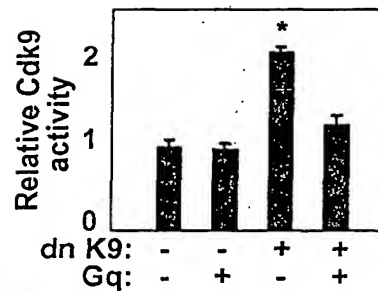
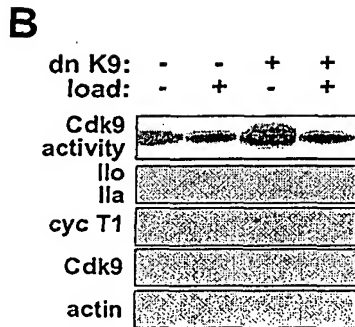
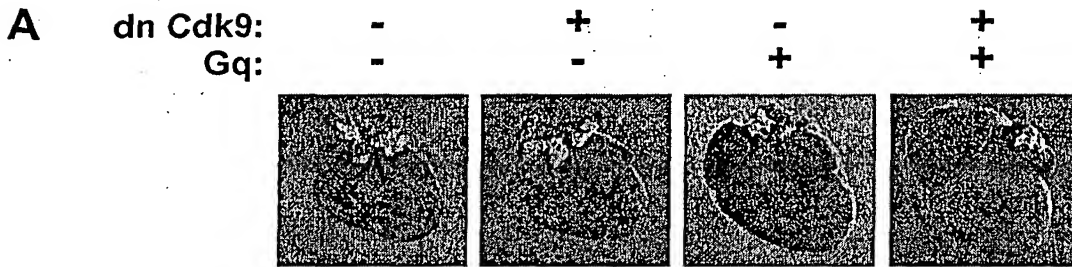


FIG. 9

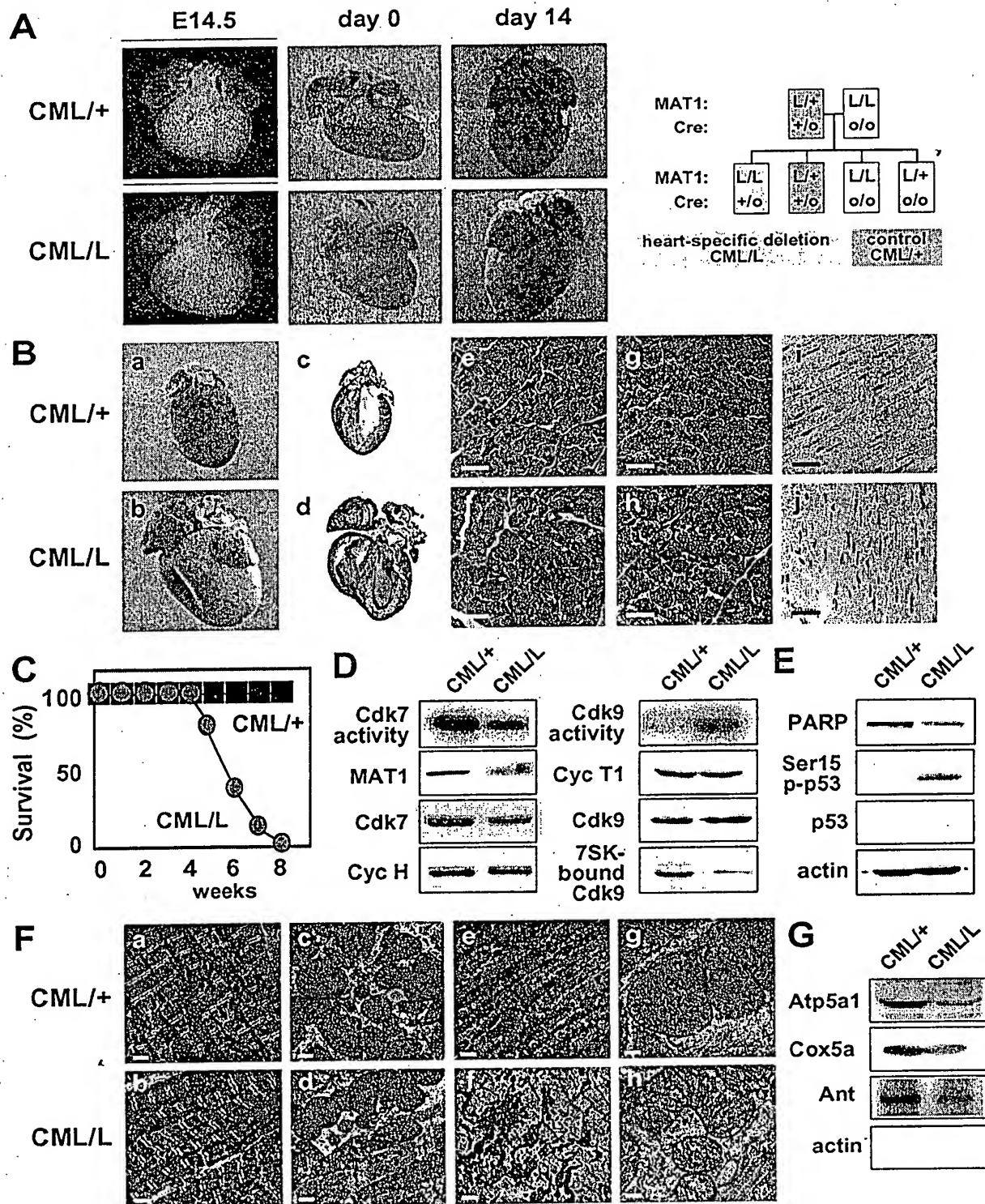


FIG. 10

αMHC-Cre  
age (wk)  
MAT1 L/x



# REPPRESSED AT 4 WK BY CARDIOMYOCYTE-SPECIFIC DELETION OF MAT1:

3-oxoacid CoA transferase  
acetyl-Coenzyme A dehydrogenase, short chain  
BCL2/adenovirus E1B 19 kDa-interacting protein 1, NIP3  
bone morphogenetic protein 7  
branched chain ketoacid dehydrogenase E1, beta  
cadherin 13  
calcium channel, voltage-dependent, T type, alpha 1G  
carnitine deficiency-associated gene expressed in ventricle 1  
catechol-O-methyltransferase  
citrate synthase  
cuti-like 1 (Drosophila)  
cytochrome c oxidase, subunit VIIa 1  
DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 16  
deleted in polyposis 1  
dihydrolipoamide branched chain transacylase E2  
dihydrolipoamide dehydrogenase  
dodecenoyl-Coenzyme A delta isomerase  
electron transferring flavoprotein, alpha  
enoyl coenzyme A hydratase 1, peroxisomal  
enoyl Coenzyme A hydratase, short chain, 1, mitochondrial  
fibroblast activation protein  
FK506 binding protein 4 (59 kDa)  
four and a half LIM domains 2  
fumarate hydratase 1  
G elongation factor  
gap junction membrane channel protein alpha 1  
heat shock 10 kDa protein 1 (chaperonin 10)  
heat shock protein, 60 kDa  
histidine rich calcium binding protein  
interferon activated gene 203  
isocitrate related homeobox 3 (Drosophila)  
isocitrate dehydrogenase 3 (NAD+) alpha  
isocitrate dehydrogenase 3 (NAD+), gamma  
isovaleryl coenzyme A dehydrogenase  
kit ligand

lipin 1  
lipocalin 7  
metal response element binding transcription factor 2  
metallothionein 1  
methylmalonyl-Coenzyme A mutase  
mitochondrial ribosomal protein L12  
mitochondrial ribosomal protein L34  
myeloid leukemia factor 1  
myomesin 2  
NADH dehydrogenase (ubiquinone) flavoprotein 2  
p300/CBP-associated factor  
peroxiredoxin 3  
phosphofructokinase, liver, B-type  
phospholipid transfer protein  
phytanoyl-CoA hydroxylase  
plasma membrane associated protein, S3-12  
potassium voltage-gated channel, Shal-related family, 2  
programmed cell death 5  
prohibitin  
prostaglandin D2 synthase (21 kDa, brain)  
proteasome (prosome, macropain) 28 subunit, alpha  
RAN guanine nucleotide release factor  
retinoid X receptor gamma  
sequestosome 1  
slalyltransferase 8 (alpha-2, 8-sialyltransferase) D  
thioesterase/acyl-Coenzyme A hydratase, beta subunit  
sirtuin 3 (silent mating type information regulation 2, homolog) 3  
succinate dehydrogenase complex, subunit A  
succinate-Coenzyme A ligase, GDP-forming, beta subunit  
thyroid hormone responsive SPOT14 homolog (Rattus)  
transcription elongation factor A (SII), 3  
transforming growth factor, beta induced, 68 kDa  
translocator of inner mitochondrial membrane 44  
ubiquinol-cytochrome c reductase core protein 1  
vascular endothelial growth factor B

# INDUCED AT 4 WK BY CARDIOMYOCYTE-SPECIFIC DELETION OF MAT1:

26S proteasome-associated pad1 homolog  
5' nucleotidase, octo  
a disintegrin and metalloproteinase domain 9  
actinin, alpha 1  
acyl-Coenzyme A thioesterase 2, mitochondrial  
acyl-Coenzyme A thioesterase 3, mitochondrial  
aldehyde dehydrogenase family 1, subfamily A1  
annexin A1  
annexin A3  
arfadne homolog 2 (Drosophila)  
biglycan  
calcium and integrin binding 1 (calmyrin)  
cardiac morphogenesis  
casein kinase 1, delta  
CD24a antigen  
CD83 antigen  
CD81 antigen  
chaperonin subunit 9 (theta)  
chloride intracellular channel 4 (mitochondrial)  
chondroitin sulfate proteoglycan 2  
coagulation factor II (thrombin) receptor  
connective tissue growth factor  
CREBBP/EP300 inhibitory protein 1  
cyclin-dependent kinase inhibitor 1A (P21)  
cysteine rich intestinal protein  
cysteine rich protein  
cytokine receptor-like factor 1  
cytotoxic T lymphocyte-associated protein 2 alpha  
DEAD/H box polypeptide 50  
doloindase, iodothyronine, type II  
diaphorase 1 (NADH)  
dihydropyrimidinase-like 3  
elastin  
enabled homolog (Drosophila)  
epidermal growth factor pathway substrate 15  
epithelial membrane protein 1  
fibulin 2  
follicle-stimulating-like  
four and a half LIM domains 1  
glutamine synthetase  
glutathione peroxidase 3  
glycogenin 1  
granulin  
GrpE-like 1, mitochondrial  
H3 histone, family 3B  
heat shock 27kD protein 2  
heat shock 70 kDa protein 4  
heparin-binding epidermal growth factor  
histone H3  
HIV-1 Rev binding protein  
hypoxia inducible factor 1, alpha subunit  
IK cytokine  
inhibitor of DNA binding 2  
insulin-like growth factor binding protein 7  
insulin-like growth factor I receptor  
integrin alpha 5 (fibronectin receptor alpha)  
integrin beta 4 binding protein  
integrin beta 6  
integrin linked kinase  
interferon-related developmental regulator 1  
lamin A  
low-density lipoprotein receptor-related protein 10  
LPS-induced TN factor  
lysyl oxidase

MAP kinase-interacting serine/threonine kinase 2  
matrix gamma-carboxyglutamate (gla) protein  
moesin  
myosin, heavy polypeptide 7, cardiac muscle, beta  
myotrophin  
noslin  
neuritin  
Niemann Pick type C2  
NS1-associated protein 1-like  
nuclear cap binding protein subunit 2, 20kDa  
nuclear factor I/X  
nuclear protein 1  
ornithine decarboxylase antizyme inhibitor  
osteoblast specific factor 2 (fasciclin I-like)  
paraoxonase 2  
PDZ and LIM domain 3  
phosphofructokinase, platelet  
phosphatidylinositol transfer protein, beta  
polypyrimidine tract binding protein 2  
procollagen C-proteinase enhancer protein  
procollagen, type I, alpha 2  
procollagen, type IV, alpha 5  
procollagen, type V, alpha 2  
procollagen, type VIII, alpha 1  
programmed cell death 6 interacting protein  
prolyl 4-hydroxylase, beta polypeptide  
prostaglandin I2 (prostacyclin) synthase  
protein phosphatase 1A, Mg dependent, alpha  
protein tyrosine phosphatase, non-receptor type 21  
quaking  
ras homolog gene family, member J  
RAS p21 protein activator 3  
resilin  
retinol binding protein 1, cellular  
RNA binding motif protein 4  
RNA polymerase I associated factor, 53 kD  
S100 calcium binding protein A10 (calpactin)  
S100 calcium binding protein A11 (calizzarin)  
S100 calcium binding protein A13  
S100 calcium binding protein A5 (calcyon)  
secreted modular calcium binding protein 2  
serpin, clade B, member 6  
serpin, clade E, member 1  
serpin, clade E, member 2  
serpin, clade F, member 1  
serine protease inhibitor 6  
serine/threonine kinase 2  
slalyltransferase 10  
sin3 associated polypeptide, 30kD  
Son of sevenless homolog 1, (Drosophila)  
spermidine/spermine N1-acetyl transferase  
sphingosine phosphate lyase 1  
talin  
thrombospondin 1  
tissue factor pathway inhibitor  
tubby like protein 4  
tubulin, alpha 1  
tubulin, beta 2  
ubiquitin 1  
ubiquitin carboxyl-terminal esterase L5  
ubiquitin carboxy-terminal hydrolase L1  
UDP-glucose dehydrogenase  
uridine-cytidine kinase 2

FIG. 11